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| APPLICATION NO.                        | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/665,149                             | 09/22/2003  | Tomoaki Takahashi    | Q77106              | 5778             |
| 65565                                  | 7590        | 03/14/2007           | EXAMINER            |                  |
| SUGHRUE-265550                         |             |                      | HUFFMAN, JULIAN D   |                  |
| 2100 PENNSYLVANIA AVE. NW              |             |                      | ART UNIT            | PAPER NUMBER     |
| WASHINGTON, DC 20037-3213              |             |                      |                     | 2853             |
| SHORTENED STATUTORY PERIOD OF RESPONSE |             | MAIL DATE            | DELIVERY MODE       |                  |
| 3 MONTHS                               |             | 03/14/2007           | PAPER               |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/665,149             | TAKAHASHI ET AL.    |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Julian D. Huffman      | 2853                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### **Status**

- 1) Responsive to communication(s) filed on 12 January 2007.
- 2a) This action is **FINAL**.                                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### **Disposition of Claims**

- 4) Claim(s) 1-8,38,41,42,44,45 and 49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 38,42 and 45 is/are allowed.
- 6) Claim(s) 1-8,41,44 and 49 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### **Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### **Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    - a) All    b) Some \* c) None of:
      1. Certified copies of the priority documents have been received.
      2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
      3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### **Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____.   | 6) <input type="checkbox"/> Other: _____.                         |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 5-8, 41, 44 and 49 are rejected under 35 U.S.C. 102(e) as being anticipated by Mantell (U.S. 6,189,993 B1).

Mantell discloses:

With regards to claim 1,

an ink jet recording apparatus (fig. 4) comprising:

a recording head (fig. 4, element 20) provided with a pressure generating element (column 1, lines 24-26);

a scanning mechanism for moving the recording head in a main scanning direction (14);

a data developer for developing print data into multi-bit jetting data (132);

a drive signal generator for generating a drive signal including a plurality of drive pulses, on every unit print cycle (21);

a translator for translating the multi-bit jetting data into pulse select information associated with the respective drive pulses (21, column 10, lines 17-23);

a drive pulse supplier (20, 21) for selectively supplying at least one of the drive pulses to the pressure generating element in accordance with the pulse select information to drive the pressure generating element;

a basic recording mode for recording a dot having a size which is selected from one of a plurality of sizes, in a basic unit pixel which is associated with a unit recording area corresponding to the unit print cycle (draft mode, prints one dot per basic unit pixel area, column 5, lines 62-65);

a high-resolution recording mode for recording a dot in a fine unit pixel, a plurality of fine unit pixels being arranged within the unit recording area in the main scanning direction (any one of the higher levels of grayscale, up to four drops per pixel area, column 6, lines 21-39, pixels can be deposited at different fine unit pixel locations in a superpixel); and

a mode selector for selecting one of plural recording modes including the basic recording mode and the high-resolution recording mode (fig. 5),

wherein the data developer develops the print data into the jetting data so as to indicate the size of the dot to be recorded in the basic unit pixel when the mode selector selects the basic recording mode (the number of dots deposited is equivalent to the size of the dot recorded); and

wherein the data developer develops the print data into the jetting data such that each bit therein indicates whether the recording is conducted or not in each associated

fine unit pixel, when the mode selector selects the high-resolution recording mode (the print data is digital and indicates whether recording is conducted or not in each pixel),

wherein the same drive signal is used in each of the basic recording mode and the high-resolution recording mode (since the drops are identical throughout the recording modes, the same drive signal is used).

With regards to claim 2, the data developer develops the print data into the jetting data such that bits therein indicate the size of the dot to be recorded in the unit recording area, when the mode selector selects the basic recording mode (since the jetting data indicates how many droplets of ink to deposit in each unit recording area, it indicates the size of the dot to be recorded).

With regards to claim 5, the mode selector selects the recording mode in accordance with the print data (column 9, lines 58-62, the print mode is determined based on the media type and print quality, which are values stored with the print data and transmitted by the print driver).

With regards to claim 6, the plural drive pulses are of an identical profile (only one type of drive pulse is used).

With regards to claim 7, the drive pulses are spaced at constant intervals within the unit print cycle (fig. 3, the dots are constantly spaced, thus the drive signals are constantly spaced when the carriage moves at a constant velocity).

With regards to claim 8, an initial trigger for starting the unit print cycle is derived from the scanning mechanism (46).

With regards to claim 41, either one of the recording in the basic unit pixel and the fine unit pixel is performed by a single movement of the recording head in the main scanning direction (recording of the basic unit pixel in the draft recording mode is performed by a single movement of the recording head in the main scanning direction since only one droplet of ink is ejected in the unit pixel area).

With regards to claim 44, a volume of every ink droplet ejected from the recording head is the same irrespective of the mode selected by the mode selector (fig. 3).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mantell in view of Bain (U.S. 4,521,786).

Mantell discloses everything claimed with the exception of rewritable waveform select tables.

Bain discloses rewritable waveform select tables (column 4, lines 51-64).

It would have been obvious to one having ordinary skill in the art at the time of the invention to incorporate the waveform select tables of Bain into the invention of

Mantell for the purpose of enabling jet-to-jet cross talk compensation or frequency-dependent compensation and closed loop printhead control (column 4, lines 51-64).

***Response to Arguments***

5. Applicant's arguments filed 12 January 2007 have been fully considered but they are not persuasive.

Applicant argues that Mantell does not provide the same drive signal used in the basic recording mode and the high resolution recording mode. Applicant interprets the term drive signal to refer to the entire signal used to produce all of the dots in a unit pixel 66. However, the term drive signal is not limited to this interpretation. One of ordinary skill in the art would appreciate that drive signal generally refers to the waveform that causes the ejector to eject a droplet of ink. Since the same diameter droplet is ejected in each of the recording modes, the same drive signal is used, where the number of times each drive signal is used in the unit area varies with the resolution. U.S. 5,610,637 to Sekiya is a very well known prior art reference that clearly discloses how multiple droplets in a unit recording area are created. Specifically, the drive signal remains the same, it is only the number of times that it is applied that is varied. Both Sekiya and Mantell are thermal ink jet printers. Sekiya is cited merely to show how the various droplets are produced in the invention of Mantell, which omits an illustration of the drive signals presumably because they are well known in the art.

Claim 49 does not introduce any new structure, as such it does not further limit the structure of the apparatus claimed. Further, the scanning mechanism of Mantell is capable of being operated in the manner claimed.

***Allowable Subject Matter***

6. Claims 38, 42 and 45 are allowed.

***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

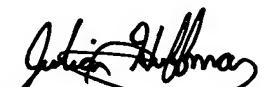
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian D. Huffman whose telephone number is (571) 272-2147. The examiner can normally be reached on 10:00a.m.-6:30p.m. Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Julian D. Huffman  
Primary Examiner  
Art Unit 2853  
5 March 2007